

NOTES ON THE NOMENCLATURE AND SYNONYMY OF OLD WORLD MELECTINE AND ANTHOPHORINE BEES (HYMENOPTERA, ANTHOPHORIDAE)

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ABSTRACT

Tetralonioidella Strand, 1914, is a forgotten name that has fallen into oblivion ever since it was defined and published. The name was given to an anthophorid bee of the Melectinae, which was described in some detail from Taiwan. As a validly proposed name it is resurrected, its monobasic type-species, *T. hoozana* Strand, 1914, being recognized as a distinct species, congeneric with, but differing specifically from, all described taxa formerly placed in *Protomelissa* Friese, 1914 (syn. nov.) or *Callomelecta* Cockerell, 1926. All ten presently known species are (re)defined, arranged in a key and, where necessary, illustrated by the author. Included are *T. nepalensis* spec. nov. (Nepal) and *fukienensis* spec. nov. (SE China), the latter being the first of its genus recorded from the Chinese continent. A redescription and figures are given of the little known holotype of *T. habropodae* (Cockerell, 1929), from Thailand, while the only known specimen of *T. iridescens* (Friese, 1914), from Taiwan, is probably lost but considered conspecific with *T. hoozana* Strand from the same island.

A second chapter deals mainly with six undoubtedly validly proposed specific names given by Newman (1835) to trivial variations of *Melecta albifrons* (Forster, 1771), collected in England. Two of these, *alecto* and *megaera*, were first described as new by Newman but quite accidentally proposed also by Liefstinck (1974), to denote two new species found in the Near East. These new homonyms are here replaced by *M. diligens* nom. nov. and *mundula* nom. nov., respectively. — Lastly, in the anthophorine host bee genus *Habropoda* F. Smith, the unique type of *H. krishna* Bingham, 1909, proved to be conspecific with *H. apatelia* Liefstinck, 1974, the last-mentioned name thus being placed in the synonymy of *H. krishna* Bingham.

Tetralonioidella STRAND, 1914, A PARASITIC ORIENTAL BEE GENUS RE-INSTATED

Since publication of my revision of the melectine genus *Protomelissa* Friese, 1914 (see Liefstinck, 1972: 267—282, figs. 1—16, pl. 1 figs. 1, 2, with map), some important nomenclatural changes on the genus and species level have again become necessary. As pointed out in that last paper, Friese's diagnosis of *Protomelissa* was published in June, 1914. Since the two Taiwanese melectines *Anthophora sauteri* Friese (original description published 15 May, 1911), and *Melecta formosana* Cockerell (the same dated March, 1911), turned out later to be conspecific, *formosana* became the type-species of *Protomelissa*. However, at that time it was still unknown that few months earlier (April—May, 1914), E. Strand had already published notes and a description of a very puzzling bee, like-

wise found in Taiwan (Formosa) which he "conditionally" named *Tetralonioidella*, with the monobasic type-species *T. hoozana* Strand. As we will see, the unique type of this bee is congeneric with both *Protomelissa* Friese and the much later described genus *Callomelecta* Cockerell, 1926 (type-species *C. pendleburyi* Cockerell, from the Malay Peninsula).

The original account of *Tetralonioidella hoozana* Strand was published in German and, for a better understanding of the situation, is here copied verbatim under that species. By the absence of a female, the unique male was mistaken for some non-parasitic, pollen-collecting member of the Eucerinae presumably related to *Tetralonia*. Unfortunately, this resulted in the choice of that whimsical generic (or subgeneric) name *Tetralonioidella* which is, of course, a veritable misnomer. It is not strictly a nomen oblitum since the whole description was simply

overlooked and forgotten ever after its introduction, no mention having been made of it in any catalogue or faunal list of the Apoidea. The reasons for this neglect are easily understood because (1) Strand's story of the affinities of *Tetralonioidella* is confused, the whole account being full of thoughts couched in deceptive terms leaving no room for conclusions; (2) one of the most outstanding characters of this bee, viz., the presence of a pair of robust mesoscutellar processes, was left unnoticed; and (3) Friese's almost simultaneously published definition of the genus *Protomelissa* was not known to Strand.

Considering the above facts, it will be clear that *Tetralonioidella*, though proposed conditionally, is the oldest available name amongst those of the included co-ordinate synonyms, i.e. *Protomelissa* and *Callomelecta*. Even if the provisions laid down in art. 33 (sect. b i and ii) of the law of priority in the Code, are taken into consideration, its validity and re-introduction cannot be called in question.

The synonymy, then, is briefly as follows:

Tetralonioidella Strand

Tetralonioidella Strand, April—May, 1914: 139—141 (type-species: "*Tetralonia* (?) *hoozana*" Strand, 1914).

Protomelissa Friese, 1 June, 1914: 322, 323 (type-species: *Anthophora sauteri* Friese, May, 1911 = *Melecta formosana* Cockerell, Mar., 1911). — Sandhouse, 1943: 592 (type-species invalidly proposed: *Protomelissa iridescens* Friese, June, 1914 = *Tetralonioidella hoozana* Strand, April—May, 1914; *iridescens* syn. nov. — Lief tinck, 1972: 260, 261 (generic key), 267—270 (diagnostic char.) (type-species: *Melecta formosana* Cockerell, Mar., 1911).

Callomelecta Cockerell, 1926: 621 (type-species: *Callomelecta pendleburyi* Cockerell, 1926). — Lief tinck, 1944: 58—62 (gen. & spec. redefined); Lief tinck, 1972: 269, 270 (synon. notes).

The fullest account of the present genus is the one given by Lief tinck (1944, sub *Callomelecta*). It was based on a study of both sexes of three Malaysian species which on that occasion were elaborately described and keyed. These and other species were arranged also in the key published by me at a much later date (1972, sub *Protomelissa*). Except for specific differences in sculpture, body-colour, pubescent pattern and sexual structures, the above definitions of the male are fully applicable to the type-species *T. hoozana*, of which sufficient details can be

found in the next descriptive key and in Strand's original narrative copied thereafter.

KEY TO THE MALES OF *TETRALONIOIDELLA* (N.B. — The ♂ of *T. tricolor*, and the ♀ of 5 other species are unknown)

1. Antenna long and slender, surpassing tegula; scape short, claviform, little curved, less than three times as long as diameter at apex; anterior face with conspicuous compact patch of longish, partly raised, silky and finely branched, pale yellow hairs pointing apicad. Segment 2 hairy, extremely short and annular, retracted and occasionally hidden from view (fig. 20); 3 also short but nearly thrice as long as 2, shiny and cup-shaped, only slightly shorter than its width at apex; 3—13 hairless or almost so, straight and cylindrical; 4—6 slender, 4 up to three times longer than its greatest diameter, 5—6 subequal but shorter than 4; remaining segments successively shorter toward end, more or less squarish, each with lateral carina, posterior faces rather flattened and increasingly more distinctly crenulated (fig. 13—14, 20). Thorax bulky, clothed densely with long fine plumose hairs. Abdominal tergites not banded, with short varicoloured pubescence. Inner rami of mid and hind tarsal claws distinctly shorter than outer, both acuminate and claw-like, not squarish or axe-shaped 2
- Antenna shorter, not or barely surpassing tegula; scape long and slender, at least three times longer than broad, variably curved, often hairy but lacking conspicuous compact brush of finely branched silky hairs anteriorly; segment 2 often short and annular though not retracted and always plainly visible (figs. 10—12); 4—5 less markedly elongated, following segments relatively shorter than in next three species, not noticeably crenulated; last segment only little flattened below, not downcurved. Mandibles unidentate. Inner rami of mid and hind tarsal claws much shorter, squarish or axe-shaped (fig. 5) 3
2. Integument of head, all thoracic sclerites and propodeum, deep black, only the face reddish black; ground colour of abdomen shining bright orange-rufous above and underneath, only the (partly retracted) tergites 4—6 on either side in front of graduli somewhat obscured, as is also the extreme

- base of 7. Tergites not banded, almost bare, clothed sparsely with extremely minute appressed pale hairs; graduli at sides of 1, and 2 except upon middle, with narrow but slightly longer silvery yellow appressed hair-lines, also seen on about half of exposed portion of 4; hairs longer and sparser on disk of next tergites and on apical sternites, integument of the latter somewhat obscured upon middle at base. The following body parts are also light or dark ferruginous: glossal galea, mandible-bases, labrum, clypeus and antennae anteriorly, tegulae, and legs including coxae and trochanters. Antennal scape and flagellar segments posteriorly, brownish. Labrum relatively long; subequal to its width near base, anterior border broadly and deeply emarginate with well-rounded lobes (fig. 19). Mandibles simply sickle-shaped, lacking interior subapical tooth (figs. 17, 18). Tergite 7 shallowly excised, broadly V-shaped (fig. 21). Antennal segments (fig. 20) shaped much as in *himalayana* and *formosana*, the pale silky hair-patch covering front of scape conspicuous, flagellar segments less markedly crenulated but last joint distinctly swollen basally, then strongly hollowed out, downcurved and tapering to a point. Thorax posteriorly glossy reddish black; scutellum behind with median carina thickened at apex; spines long and slender, finger-like, directed straight back, feebly downbent, apices reddened, distinctly pointed, shorter than surrounding pubescence; metanotum and propodeum entirely smooth and polished. Inner rami of mid and hind tarsal claws but little shorter than outer. Thoracic pubescence uniformly pale-coloured, long and fluffy, hairs rather shorter and less closely set than in next two species. Thailand *habropodae*
- Ground colour of abdomen less shiny, at least with basal portion of tergites 1—2 dark brown or black, clothed with short appressed tomentum differing in character: hairs either sparsely distributed, shortly branched, thin and darkest on exposed basal surface, or longer, more crowded together and distinctly plumose upon broad, paler-coloured apical margins of tergites; hence only basal part of 1—2 fully exposed and shiny, those of 3—7 withdrawn, leaving only dullish distal portions covered with closely set, dark golden-yellow plumose hairs. Mandibles with single interior subapical prominence. (For further details, see Lieftinck, 1972). Himalaya and Taiwan *himalayana* and *formosana*
3. Pubescent colour-pattern of thorax and abdomen strongly contrasting, pile on thorax long, dense and feathery, fox-red to orange-rufous; and on abdominal tergites very short, scanty and mainly dark on glossy deep black ground, not concealing surface, tergites not or incompletely pale-banded. Three small to medium-sized closely similar species, all with labrum concave dorsally, strongly deeply punctate, the anterior border distinctly upturned 6
 - Pubescent colour-pattern of thorax and abdomen more uniform: pile on thorax dense though somewhat shorter and less bright, ochraceous-buff to ochraceous-orange; very short, less vivid and often forming complete, more or less definite hair-bands on dullish dark brown abdominal tergites 4
 4. Size rather large: body length ca. 13.5 mm; elongate, thorax and abdomen subequally broad, the latter gradually tapering, dull, lacking definite hair bands. Integument of abdominal tergites and sternites distinctly bicoloured: basal (i.e. narrowest) portion of 1—6 dark brown, the distal (postgradular and broader) parts of same semitransparent, distinctly paler, yellowish brown; all tergites with extremely short appressed hairs entirely concealing a finely superficially punctate surface, colour throughout ochraceous-buff to ochraceous-orange, hairs at bases of tergites 2—4 shortest and but little darker than on remaining parts. Labrum much shorter than broad, widest basally, apical border shallowly emarginate (fig. 4). Antenna relatively short, hardly reaching tegula; scape little curved, straight in dorsal view, 2 small but distinct, slightly broader than long, 3 and 4 elongate, distal flagellar segments only slightly crenulated (figs. 1—3). Metanotum finely wrinkled, base of propodeal triangle shiny though coarsely rugose for a distance equaling length of metanotum, triangle for the rest (save laterally) smooth and polished. Hind tarsal claw, fig. 5. Apex of tergite 7, fig. 6. Hidden sternites and genitalia, figs. 7—9. Dorsal thoracic pubescence relatively short but forming tufts of much longer hair surrounding, and practically concealing, the long curved scu-

- tellar spines. Taiwan *hoozana*
- Generally smaller, body length 8.5—12.5 mm. Integument of abdominal tergites not noticeably bicoloured, i.e. uniform dark brownish black or black; tergal pubescence either short, decumbent and uneven, or forming more or less definite transverse pale subapical bands. Two very similar, probably nearly related species whose general appearance, texture and nature of pubescent pattern are almost identical 5
5. Labrum short, broadest and more parallel-sided near base, and also shorter than in both *hoozana* (fig. 4) and *fukienensis*, mid-length to breadth ratio = 60.4 : 100, the emargination smaller and less deep than in *hoozana*, resembling *fukienensis* most closely (fig. 27). Antennal segments 3—4 subequally long, both relatively shorter than in *fukienensis* (fig. 12). Plate-shaped inner rami of mid and hind tarsal claws squarish, apices straight cut off. Apex of tergite 7 deeply broadly emarginate, the small prominent lobes rounded off (fig. 31). Mid-apical plate of sternite 7 parallel-sided (fig. 32). Dorsal thoracic pubescence xanthine-orange, hairs longer than in *fukienensis*; appressed tergal abdominal hair-bands 1—5(6) but little paler. Antennae and legs throughout dark reddish brown, tarsi becoming ferruginous distally. Body length 11.5—12.5 mm. For detailed descriptions of both sexes, see Lieftinck (1944: 71—75). West Java *insidiosia*
- Labrum longer than in both *insidiosia* and *hoozana* (ratio = 75 : 100), greatest width slightly before midway length, sides more convex. Metanotum and propodeal triangle not very shiny, microscopically tessellate, extreme base of triangle distinctly wrinkled but lacking the strong ridges on either side of the median line seen in *insidiosia*; for the rest, propodeum, like *insidiosia*, more shiny and strongly punctate. Basal antennal segments, fig. 11. Plate-shaped inner rami of mid and hind tarsal claws axe-shaped, apices subacute: obliquely cut off. Apex of tergite 7 as in *insidiosia*, but emargination less wide and deeper, subrectangulate, the lobes more broadly rounded (fig. 28). Mid-apical plate of sternite 7 distinctly constricted basally, rather spatulate (fig. 29). Dorsal thoracic pubescence and tergal abdominal hair-bands as in *insidiosia* but all hairs shorter and paler, those covering tergites finer and more closely set. Antennae black above, dark reddish brown below; legs also darker than in *insidiosia*, the apical tarsal segments more reddish brown. Body length 11.5 mm, fore wing 8.5 mm. SE China *fukienensis*
6. Labrum (fig. 22) not much broader than long, widest basally, slightly narrowing toward end, with outwardly convex sides, anterior border strongly upturned, more or less pinched in the median line, the apical emargination small and shallow in full dorsal view; surface shiny, strongly deeply punctate, punctures circular, smaller than interspaces. Antennal 4 slightly longer than 3 or 5 (fig. 10, ventral view) or subequal (dorsal view), and also differing from the next ones by having a dense coating of extremely minute, raised, silvery hairs; erect hairs on scape also longer than in next species. Scutellar spines finger-like, strongly downcurved, apex subacute or rounded, neither compressed nor bifid, surrounded by long fox-red pubescence. Metanotum finely wrinkled; propodeal triangle glossy black, throughout smooth and polished. Dorsal thoracic pubescence as in *pendleburyi*. Abdominal tergites 1 and most of 2 clothed sparsely with depressed plumose, pale orange-yellow hairs, those on 2 forming ill-defined postgradular bands not quite concealing surface; 3—4 similarly banded, subinterrupted by black. Apex of tergite 7 hairless, shaped as in fig. 23. Hidden sternites 7—8 and genital capsule, figs. 24 and 25—26, respectively. Size relatively small, total length 9.5 mm, fore wing 7.7 mm. Nepal *nepalensis*
- Labrum distinctly broader than long, even more markedly so than in *hoozana* (fig. 4), anterior border either rather widely and deeply emarginate (*vulpecula*), or almost straight in dorsal view (*pendleburyi*). Antennal 3 and 4 subequal in length (figs. 15—16), raised hairs on scape and next segments all shorter and more sparsely distributed. Abdominal tergites deep black, 2—6 scarcely or not at all banded, the much shorter tomentum thin and more even 7
7. Anterior border of labrum hardly upturned and almost straight in full dorsal view. Apical emargination of abdominal tergite 7 deeply U-shaped, subequal in form to the tubercles (Lieftinck, 1944, fig. 6), the punctuation similar to *nepalensis*. Scutellar spines

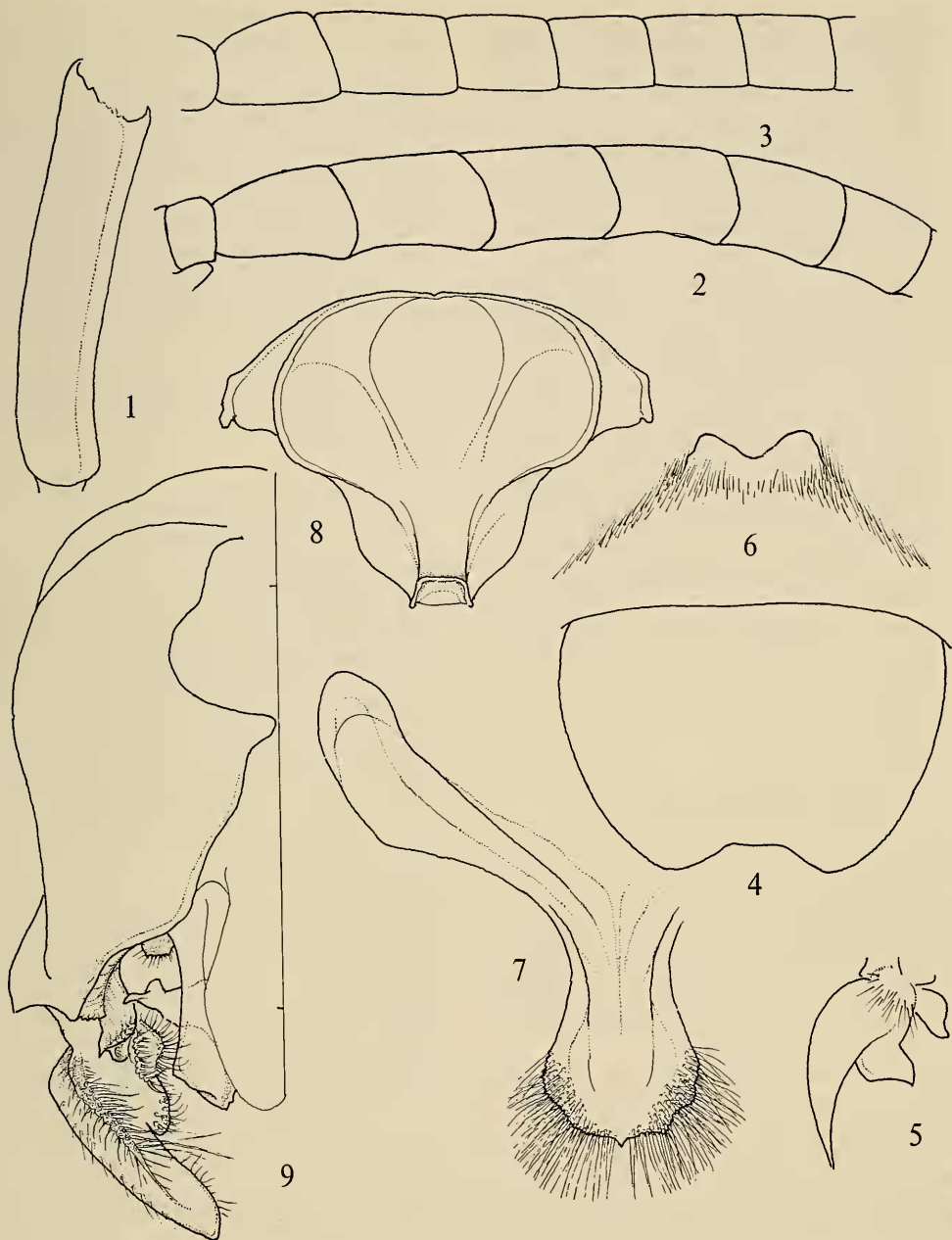


Fig. 1—9. *T. boozana* Strand, ♂ structures, holotype Taiwan; fig. 1—3, basal segments of right antenna: fig. 1, lateral view of scape, long sparse raised hairs omitted; fig. 2—3, segm. 2—8, oblique ventral (2) and dorsal view (3); fig. 4, dorsal view of labrum; fig. 5, right hind tarsal claw, oblique inner view; fig. 6, apex of tergite 7, dorsal view, long bristly basal hairs mostly omitted; fig. 7—8, sternites 7 and 8, external view; fig. 9. genital capsule, ventral view of right half, scale line 1 mm.

robust, much shorter than in *nepalensis*, less downcurved, apex laterally compressed, distinctly bifid forming a pair of little knobs. Metanotum and propodeum dullish, finely tessellate, smooth, but much less shiny than in *nepalensis*, base of triangle coarsely punctate on either side, these sclerites separated from each other by a deep sulcus. Dorsal thoracic pubescence slightly paler than in *vulpecula*. Malay Peninsula

- *pendleburyi*
 — Anterior border of labrum abruptly upturned, the latter shaped much as in *nepalensis* but longer, emargination distinctly wider and deeper than in that species. Scutellar spines still shorter than in *pendleburyi*, directed obliquely caudad and but slightly downbent, apex somewhat compressed and tapering, slanting and bluntly pointed. Metanotum and propodeum much as in *pendleburyi*, but basal area of triangle coarsely longitudinally punctate along full breadth of same. Dorsal thoracic pubescence bright xanthine orange. Apex of abdominal tergite 7 with shallow impunctate median sulcus, otherwise black-haired, emargination shallower and wider than in both *nepalensis* (fig. 23) and *pendleburyi* (fig. 37). Sumatra *vulpecula*

Tetralonioidella hoozana Strand

(figs. 1—9)

Tetralonioidella ("Tetralonia ? *hoozana* n.sp.") *hoozana* Strand, 1914 (April/May): 139—141 (♂ Formosa, Hoozan, ix.1910).

Protomelissa iridescens Friese, 1914 (1 June): 324 (♂ Formosa, Takao, Sept. 1908, H. Sauter). — Sandhouse, 1943: 592 (type-species of *Protomelissa*, not seen). — Lieftinck, 1972: 272 (key), 277, 278 (orig. descr. & notes; type not seen). **Syn. nov.**

Type material. — 1 ♂ (terminalia dissected out, glued on card and pinned on insect's pin), labelled: "*Tetralonia* (?) *hoozana* m. ♂ Strand det." (Strand's writing), "Hoozan Formosa H. Sauter x.10" (print, date written), "TYP JS" (typewritten on red), "*Tetralonioidella hoozana* Strand HOLOTYPE (= *Protomelissa iridescens* Friese), rev. MA Lieftinck 1979". Holotype ♂ in the former Deutsch. Entom. Institut (Eberswalde).

This is the first described and largest member of the genus. It fits the existing amended diagnoses of both *Callomelecta* and *Protomelissa* in all important characters and now becomes the type-species of the monobasic *Tetralonioidella*.

Male. — The uniform tint of the body pubescence is longest, tufted, and deepest orangish on the thoracic dorsum surrounding the practically invisible mesoscutellar processes, these long feathery hair-tufts being tipped with pale yellow. The neururation of the fore wing is much as in the drawing given for *T. pendleburyi* (see Lieftinck, 1972, fig. 11), i.e. the two proximal sides of the 2nd submarginal cell are subequal in length while the costal and anal sides of the latter are also about equally long though both are slightly less than half as long as the proximal sides.

The original description of *T. hoozana* is very full, as far as it goes, and is best copied along with the author's comments at full length, as follows.

"Gen. Tetralonia Spin.

Tetralonia (?) *hoozana* Strd. n.sp.

Ein ♂ von Hoozan IX.1910.

Dies Tier ist gewissermaßen ein Mittelding zwischen *Tetralonia* und *Anthophora*. Eine *Anthophora* kann es aber nicht sein, weil die Ozellen in gerader oder fast gerader Reihe angeordnet sind (bei *Anthophora* bilden sie bekanntermaßen ein ausgesprochenes Dreieck)¹⁾. Für ein *Tetralonia*-Männchen sind aber die Antennen eigentlich viel zu kurz; schon dadurch läßt die Art sich leicht von der sonst offenbar sehr ähnlichen *Tetr. himalayensis* Rad. unterscheiden. — Von *Ancyla* Lep. abweichend dadurch, daß die hinteren Metatarsen des ♂ kaum so lang wie die folgenden Tarsenglieder zusammen sowie nicht gekrümmt sind, ferner ist der Clypeus vorstehend und die Körpergröße ist bedeutender als bei den bisher bekannten *Ancyla*; soweit ohne Präparation erkennbar, sind die Mundteile ziemlich kurz. — Das zweite Geißelglied ist kaum so lang wie das dritte und auch nicht dünner, das Tier somit, sowie durch die unter sich weit entfernten und subparallelen Augen von *Meliturga* Latr. leicht zu unterscheiden.

Es ist ganz wahrscheinlich, daß für dies Tier eine neue Gattung aufgestellt werden muß (die eventuell den Namen *Tetralonioidella* m. bekommen möge); um dies mit Sicherheit zu entscheiden, wäre aber die Kenntnis auch des ♀ eigentlich nötig. Aber auch wenn dies eine typische *Tetralonia* sein sollte, dürfte die neue Benennung als Untergattungsname verwendbar sein.

Schwarz; Mandibeln leicht gebräunt in der Mitte,

¹⁾ Anm. Die von Friese in: Verh. zool.bot.Ges. Wien 1911, p. 27, beschriebene *Anthophora Sauteri* n.sp. ist eher zu *Tetralonia* zu stellen, weil die Ozellen, wenigstens beim ♀, kein Dreieck bilden. In meiner Besprechung der Art im I. Teil dieser Arbeit (in: Supplem. Entomol. II, p. 51) habe ich leider unterlassen, dies Moment hervorzuheben.

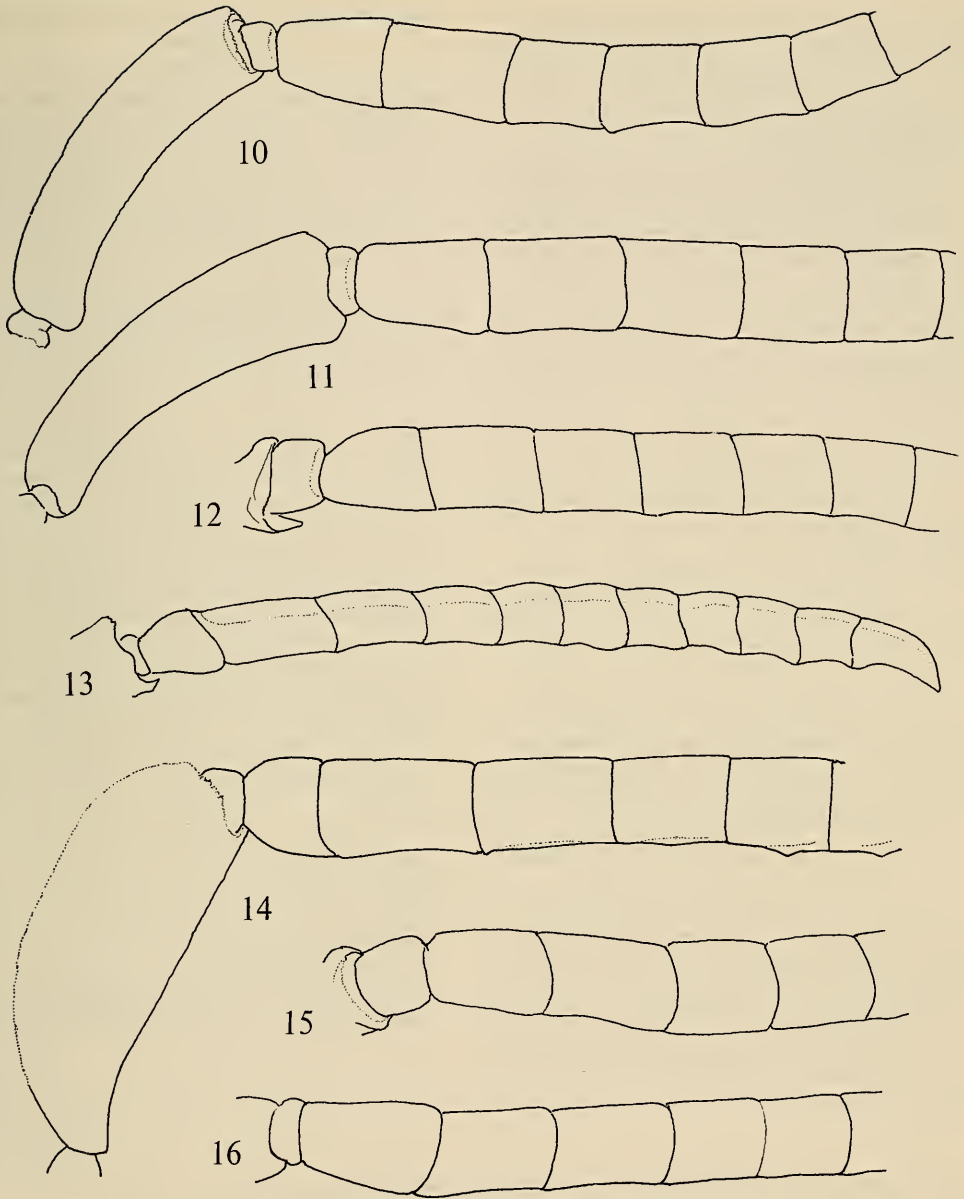


Fig. 10—16. *Tetralonioidella* species, partial view of right and left ♂ antennae; fig. 10, *T. nepalensis* spec. nov., Nepal, right segm. 1—8 showing plainly visible 2nd segment, long sparse hairs at scape omitted; fig. 11, *T. fukienensis* spec. nov., SE China, dorsal view of right segm. 1—7, same details; fig. 12, *T. insidiosa* (Lieft.), W. Java, right segm. 2—8, same scale; fig. 13—14, *T. himalayana* (Ckll.), Bhimtal, antero-ventral view of left segm. 2—13 and 1—7, lateral view, showing retracted 2nd segment (fig. 14 more enlarged, long silky hair-tuft at scape omitted); fig. 15, *T. vulpecula* (Lieft.), S. Sumatra, right antennal segm. 2—6, showing cup-shaped 2nd segment; fig. 16, *T. pendleburyi* (Ckll.), Larut Hills, Perak, the same of segm. 2—7 showing slightly shorter 2nd segment.

Labrum an der Basis beiderseits gerötet, Fühlergeißel unten schwach gebräunt, Tegulae bräunlichgelb, der hintere Hälfte der Abdominalsegmente gerötet, die Tarsen leicht gebräunt. Flügel gleichmäßig schwach angeraucht und etwas gelblich schimmernd, Geäder und Mal braunschwarz.

Der ganze Kopf hell graugelblich behaart und zwar auch auf dem Labrum lang abstehend, auf dem Clypeus ausserdem mit anliegender Behaarung. Thorax sehr dicht und lang ziemlich abstehend behaart und zwar auf dem Rücken orangegelblich, an den Seiten und unten heller behaart; die Skulptur daher nicht erkennbar. Rückensegmente des Abdomen mit feiner, kurzer, anliegender, nicht dichter, goldgelbener Behaarung, die auf der helleren Hinterhälfte der Segmente kaum heller als auf der basalen ist, als Gesamteindruck heben die helleren Binden sich daher wenig von der Grundfarbe ab. Die Bauchsegmente verhalten sich wie die Rückensegmente, jedoch ist ihre Behaarung in der Endhälfte leicht abstehend und die Segmente II und III zeigen ausserdem eine schmale helle Basalhaarbinde. Die Beine kurz und spärlich messinggelblich behaart.

Kopf schmaler als Thorax, aber breiter als lang, mit groszen, vorstehenden, subparallelen (nach unten ganz schwach konvergierenden), innen nicht ausgerandeten Augen und stark vorstehenden, vorn mitten jedoch abgeflachtem Clypeus, dessen Kontur, in Ansicht von der Scheitel, fast trapezförmig erscheint, im Profil scheint die Vorderfläche des Clypeus mit dem Labrum fast einen rechten Winkel zu bilden. Letzteres beiderseits an der Basis höckerig, am Vorderende (im Profil gesehen) leicht vorstehend. Die Antennen überragen die Mitte des Mesonotum, die Geißel zylindrisch, nur das erste und die Basis des zweiten Gliedes etwas dünner als die übrigen; das zweite Geißelglied ist etwa dreimal so lang wie das erste. Abdomen erscheint in Draufsicht an der Basis breit querschnittsen, am Ende zugespitzt, das letzte Tergit an der Spitze mitten leicht eingeschnitten. — Die dritte Kubitalzelle ist oben (vorn) so breit wie hinten, die zweite Kubitalquerader ist kurz unterhalb der Mitte stark saumwärts konvex gebogen, die zweite Kubitalzelle ist auf der Radialader nur halb so lang wie auf der Kubitalader. Körperlänge 13.5, Flügellänge 19 mm".

Protomelissa iridescens Friese, — a dubious synonym?

For a discussion of this puzzling species, see the above citations, one of which includes a transcription of the original diagnosis. Expecting the type not to turn up any more in some European museum or private collection, it must be regarded as lost or destroyed. The locality labels and dates of capture of the types of *T. hoozana* and *iridescens* are quite different, so that the chances are very slight that Strand and Friese, at a time when both authors were studying bees from "Sauter's Formosa Ausbeute", did come across the same specimen and based their descriptions successively on this one individual. On the other hand, with the recent discovery of *T. hoozana*, one would be inclined to think *iridescens* and *hoozana* are identical species, because the probability of more than two taxa of this rare genus occurring together in such a small island as Taiwan, seems unlikely. Yet the obvious discrepancies in structure presently observed (table 1, especially points 3 and 4) in the types (if correctly stated for *iridescens*!), should not be neglected. Despite the incongruities I have, with all reserve, decided to synonymize these two Taiwanese species.

Tetralonioidella formosana (Cockerell) comb. nov.

Melecta formosana Cockerell, 1911: 227, 228 (♀ Kosempo, Formosa).

Anthophora sauteri Friese, 1911: 127, 128 (♂ Tainan, Formosa).

Protomelissa sauteri; Friese, 1914: 323, 324 (♂ ♀ Tainan & Takao, Formosa).

Protomelissa formosana; Lieftinck, 1972: 273 (key); 274—277, figs. (♂ ♀ Kosempo, Tainan & Takao; orig. & further descr., synon. & full refs.).

Table 1. Differences in structure in the types of *T. iridescens* and *T. hoozana*.

<i>T. iridescens</i>	<i>T. hoozana</i>
1. Abdomen dull and with slight metallic sheen ("Abdomen mit Erzglanz", and "fast matt, schwach erzfarben schillernd");	1. Abdomen somewhat shiny but lacking any indication of metallic gloss
2. Labrum "viereckig, vorn schwach ausgerandet"	2. Labrum shaped as in fig. 4
3. Antenne rot . . . 2tes Geisselglied (segm. 3) viel kürzer als 3"	3. Antenna yellow-brown in front, dark brown behind, segm. 3 and 4 subequal in length (figs. 2, 3)
4. Apex of tergite 7 small and truncated ("klein und abgestutzt")	4. Apex of tergite 7 distinctly excised (fig. 6)
5. Body length 13 mm, width 4.5 mm	5. Body length 13.5 mm, width 4.5 mm

***Tetralonioidella himalayana* (Bingham) comb. nov.**

(figs. 13, 14)

Melecta himalayana Bingham, 1897: 516, fig. 172, insect, with left wing (♀ "Kumaon, 5000 ft., and probably throughout the Himalayas at and above that altitude").

Protomelissa himalayana; Lieftinck, 1972: 273 (key), 274, figs. 3, 7, 8 (addit. notes & ♂ struct., ♂ ♀ N & NE India).

Additional material. — Series of 12 ♂, NW India, U.P., Bhimtal near Nainital, 1500 m, 13, 14, 15 and 18.x.1978, M. A. Lieftinck, all at flowers of Labiate shrub *Plectranthus coetsa* Ham. ex D. Don. (local name "bhanira").

The above Bhimtal males are freshly emerged specimens in perfect condition. They were taken within a week's time, either in the early morning hours around 8.30 a.m., or on a return visit at 17 p.m. (4 on Oct. 14, 5 on Oct. 15, most of the remainder solitarily). All were attracted by flowers of the same plant, which grew in threes or fours at some distance from each other along a shaded forest path at the slope of a ravine. The bees flew in company with both sexes of 5 species of *Habropoda*, viz. *H. apostasia* m., *deoiopea* (Cameron), *hookeri* Cockerell, *pelmata* m., and *radoszkowskii* (Dalla Torre), the latter being by far the most common of these; females, besides taking nectar, assembled pollen at their hind tibiae and basitarsi, apparently also from *Plectranthus*. Their high-pitched notes could be heard already at about three yard's distance. I had asked Mr. Fred Smetacek, the owner of a small undisturbed patch of forest in the hills above Bhimtal, to keep an eye on the flowering season of *Plectranthus*, in 1979 and 1980. He kindly informed me in his letters that, unfortunately, no single inflorescence of plants could be found by him in any part of the same area during these next two years.

As pointed out by me earlier (1972: 273—277, sub *Protomelissa*), *himalayana* comes so close to *formosana* in stature, pubescent colour-pattern and other bisexual characters, that I have failed to discover more features than those already known for their separation. Nothing definite is known of their host relations, but both were associated in the field with *Habropoda* species, not with those of *Elaphropoda* as were other members of *Tetralonioidella*.

***Tetralonioidella tricolor* (Lieftinck) comb. nov.**

Protomelissa tricolor Lieftinck, 1972: 273 (key), 278—

281. fig. 4 (labrum; ♀ Assam, Shillong; notes & host relations).

The ♀ holotype in the Berlin museum is still the only specimen so far known. By the absence of a ♂, nothing definite can yet be said about the nearest relatives of *tricolor*, but as stated in the original description, we may expect it to come closest to *himalayana* and *formosana*. The presence of a conspicuous dense brush-like patch of long hairs in front of the antennal scape of the ♂ (loc.cit.: 273), is a unisexual character, so that my subsequent remark (loc.cit.: 278) on its absence in the ♀ as a point of distinction between species-groups, is misleading.

***Tetralonioidella habropodae* (Cockerell) comb. nov.**

(figs. 17—21)

Callomelecta habropodae Cockerell, 1929: 133. — ♂ "Siam: Doi Sutep, on summit, Feb. 9, 1928 (Cockerell)". — Lieftinck, 1944: 62, 75, footnote (original material not seen).

Protomelissa habropodae; Lieftinck, 1972: 270 (key), 281 (orig. descr. copied, with notes; original material not seen).

Type material. — 1 ♂ (holotype), labelled: "Doi Setep Siam feb. 9 Alice Hacker" (?) in unknown writing; and "*Callomelecta habropodae* Ckll. TYPE", in T.D.A. Cockerell's hand; and, "acc. 35740" (AMNH label). Holotype in Amer. Mus. Nat. Hist., New York.

The more interesting characters of this remarkable little species are summarized in the preceding key. *T. habropodae* is known only from the unique holotype ♂. In addition to the key notes and the original description, copied in full on a previous occasion (Lieftinck, loc.cit. 1972: 281), most of the hitherto unnoticed peculiarities of structure are here also illustrated (figs. 17—21).

Apart from its smallish size and the predominantly orange-brown colour of the legs and abdomen, the species is easily distinguished from all allies by a combination of the following characters: dense brush-like hair-tuft in front of the antennal scape; characteristic shape of the mid and hind tarsal claws; the unarmed mandibles; and the superficially punctate shiny surface of the first two abdominal tergites. Disk of labrum (fig. 19) slightly concave, rather shiny, rugosely punctate, colour yellow-brown, its anterior border narrowly ferruginous, long hairs semi-erect, pale yellow, the border fringed with a

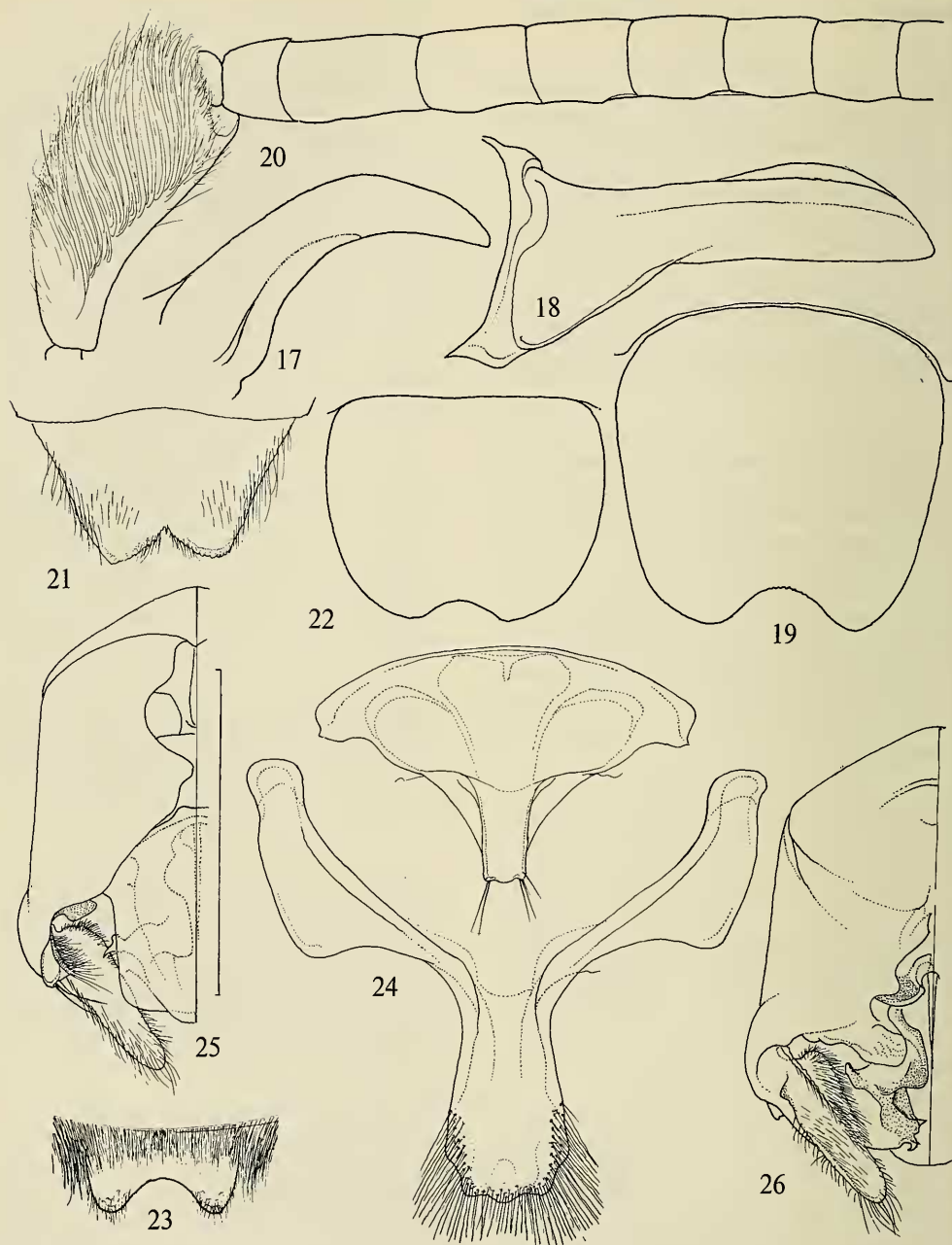


Fig. 17—21. *T. habropodae* (Ckll.), Thailand, ♂ holotype Doi Sute; fig. 17—18, left mandible, inside and extero-lateral view; fig. 19, dorsal view of labrum; fig. 20, right antennal segm. 1—9, showing long silky hair-tuft at scape and partly retracted 2nd segment, inner (ventral) view; fig. 21, apex of tergite 7, dorsal view, most longish appressed hairs omitted. — Fig. 22—26. *T. nepalensis* spec. nov., ♂ holotype Nepal; fig. 22, dorsal view of labrum; fig. 23, apex of tergite 7, partly lacking bristly hairs; fig. 24, sternites 7 and 8, external view; fig. 25—26, genital capsule, dorsal and ventral view, scale line 1 mm.

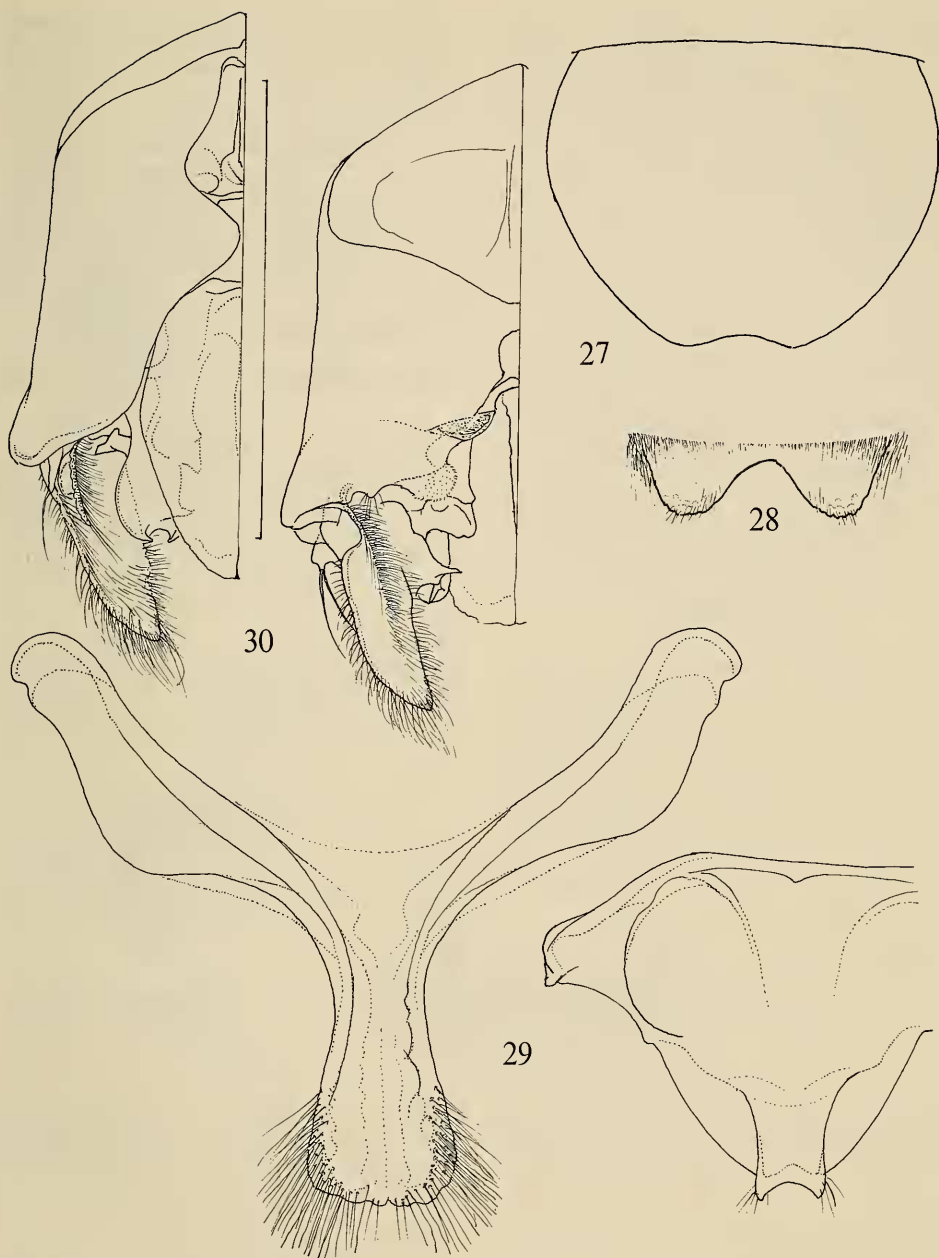


Fig. 27—30. *T. fukienensis* spec. nov., ♂ holotype SE China; fig. 27, dorsal view of labrum; fig. 28, apex of tergite 7, long depressed silky hairs mostly omitted; fig. 29, sternites 7 and 8, external view; fig. 30, genital capsule, dorsal and ventral view, scale line 1 mm.

row of stiff, parallel, pale golden bristles which are somewhat downcurved. Mandibles smooth, almost impunctate, pale brown, the apex obscured, almost black. Anterior rim of clypeus strong, ferruginous. The neuration of the strongly brownish amber-coloured fore wings is practically identical with that of *T. pendleburyi* (Lieftinck, 1944, fig. 1; and id., 1972, fig. 11). Abdominal tergite 7 (fig. 21) almost flat, surface densely rugoso-punctate, interspaces somewhat shiny, hairs pale, depressed. Body length 9.5 mm approx., fore wing 6.8 mm.

T. habropodae is undoubtedly most closely related to *himalayana* and *formosana*. It is of interest to note that in Thailand the species was found flying in company with its supposed host bee, *Habropoda sutepensis* Cockerell (for the latter, see Lieftinck, 1974: 198, 199, figs.). As we now know, *sutepensis* is a near ally of *H. apostasia* Lieft., which in N. India occurred together with *Tetralonioidella himalayana*.

***Tetralonioidella nepalensis* spec. nov.**

(figs. 10, 22—26)

Type material. — 2 ♂ (terminalia of holotype dissected out, in pinned plastic capsule), E Himalayan Range, Nepal, Kathmandu, Godavari, 5000 ft., 6.viii. 1967, Canad. Nepal Exped. (holotype); and same loc., 6000 ft., 24 July 1967, same coll. (paratype). Holotype ♂ in Biosyst. Res. Inst., Ottawa (Ontario); paratype ♂ in Mus. Leiden.

Male. — Characters as given in the key and as shown in the figures.

This is the third of a small group of slender species characterized by a bicoloured pubescent body pattern: a long and dense fox-red vestiture covering the summit of head and all of the thoracic dorsum and sides, contrasting with an almost black unbanded abdomen. Differs from the Malaysian *pendleburyi* and *vulpecula* in the paler colour of the very short appressed hairs on parts of the abdominal tergites. In *vulpecula* these short hairs are almost black and evenly distributed, in the other two lighter and most marked at the postgradular lines, especially so in the present new species.

In the type the yellowish brown postgradular hairs on tergites 1—4 are broadest and longest at the sides of 1, more or less broadly interrupted by dark brown in the median line on tergites 2—4. The paratype differs from the type in that the pale hairs on 1 cover most of the surface and are evenly distributed, whereas on 2—4 they are

somewhat more crowded together, forming inconspicuous but uninterrupted bands. These complete bands are wholly absent also in *pendleburyi*.

***Tetralonioidella vulpecula* (Lieftinck)**

(figs. 15, 37—43)

Callomelecta vulpecula Lieftinck, 1944: 68—71 & 75—77, pl. & figs. (♂ ♀ Sumatra).

Protomelissa vulpecula; Lieftinck, 1972: 272 (key), 282, pl. 1 fig. 2 (♂ ♀ Sumatra, refs.).

No additional material.

***Tetralonioidella pendleburyi* (Cockerell) comb.**

nov.

(fig. 16)

Callomelecta pendleburyi Cockerell, 1926: 621, 622 (♀ Malaya, Selangor). — Lieftinck, 1944: 62—68, figs. 1—9 & 75—77 (incl. keys ♀ ♂ and descr. allotype ♂, Perak and Pahang, Malaya).

Protomelissa pendleburyi; Lieftinck, 1972: (key), 282, figs. 9—16 (♂ ♀ Malaya, full refs.).

No fresh material. For structural details of the only known ♂ of this species, see Lieftinck, 1944 & 1972. On p. 62 line 17 in my 1944 paper, “♀ allotype” should be altered in “♂ allotype”.

***Tetralonioidella fukienensis* spec. nov.**

(figs. 11, 27—30)

Type material. — 1 ♂ (terminalia dissected out, in pinned plastic capsule), SE China, NW Fukien, Chungan distr., Bohea Hills, 600 m, 25.ix.1939, T. C. Maa. Holotype ♂ in Mus. Leiden.

Male (slightly discoloured, but otherwise in fair condition). A species sufficiently characterized in the key. Superficially most closely resembling *T. insidiosa*, from West Java, but easily distinguished therefrom by comparing the structural illustrations here given for both. Differences not mentioned in the key are that *fukienensis*, besides being slightly larger in size, is decidedly a more robustly built species than *insidiosa*, especially the mid and hind femora and tibiae of *fukienensis* being markedly more swollen (expanded) about midway their length, than in the slenderer *insidiosa*.

***Tetralonioidella insidiosa* (Lieftinck) comb.**

nov.

(figs. 12, 31—36)

Callomelecta insidiosa Lieftinck, 1944: 71—75 & 75—77, pl. & figs. (♂ ♀ Java).

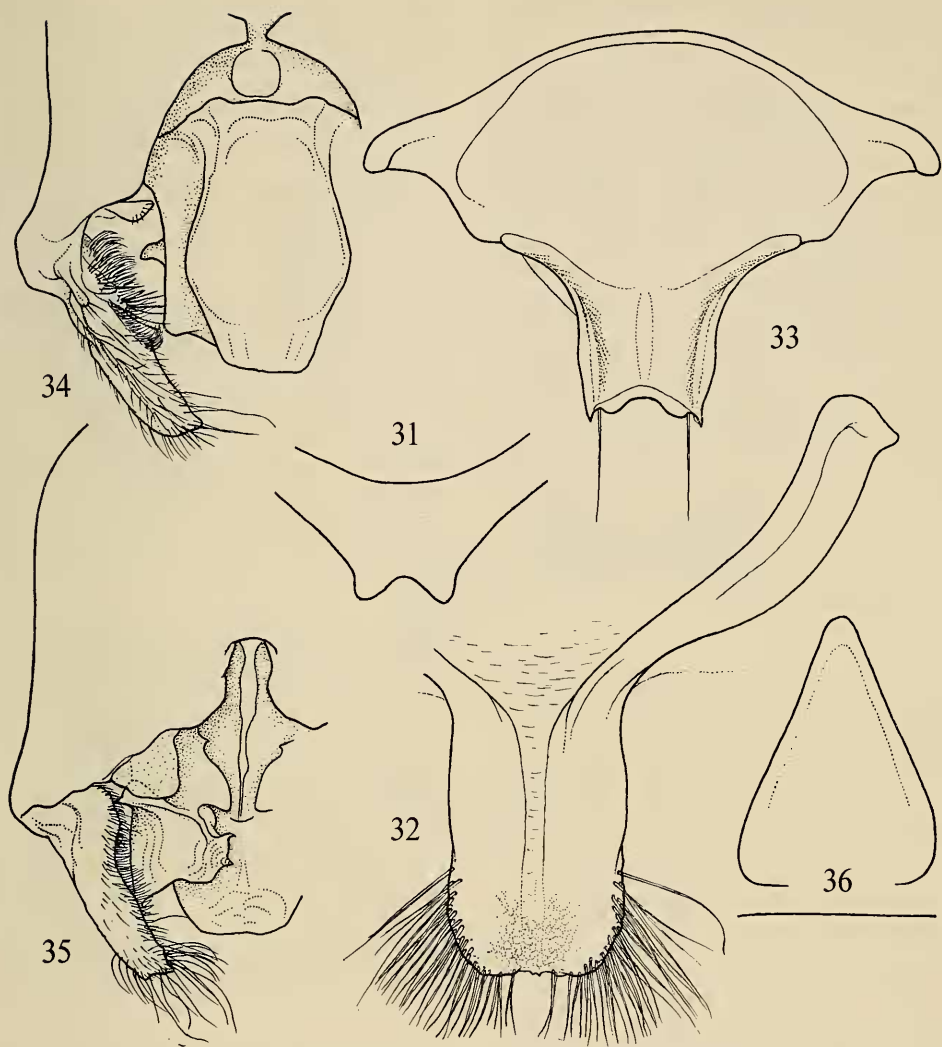


Fig. 31—36. *T. insidiosus* (Lieft.), ♂ and ♀ structures, W. Java; fig. 31, apex of ♂ tergite 7, ventral view; fig. 32—33, ♂ sternites 8 and 7, external view; fig. 34—35, ♂ genital capsule, partial dorsal and ventral view; fig. 36, ♀ pygidial plate, dorsal view (after Lieftinck, 1944).

Protomelissa insidiosus; Lieftinck, 1972: 272 (key), 282, pl. 1 fig. 1 (♂ ♀ Java, further notes).

No more recently collected material.

NEW NAMES AND SYNONYMS IN THE GENERA
ELECTA ATREILLE 1802, AND *HABROPODA* F.

SMITH, 1854

After publication of my "Prodrome" to a mo-

nograph of Palearctic *Melecta* species (Lieftinck, 1980), Mr. D. B. Baker, of Ewell, indirectly brought to my notice that two specific names introduced in the Prodrome are preoccupied by those given to different taxa in the same genus by E. Newman, in 1835. As the last-mentioned names were followed by Latin diagnoses and descriptions in English, they are undoubtedly validly proposed and should take prece-

dence over those accidentally also chosen by myself. By an unfortunate oversight, Newman's introduction and diagnoses escaped my attention, while his names (extracted from Dalla Torre's catalogue) were inadvertently considered *nomina nuda* and therefore left out of consideration in my Prodrôme. As a matter of fact, on pp. 513, 514 of his Entomological Notes (Newman, 1835), the author characterized six British "species" of *Melecta*, which he all named. Two of them were described as *M. alecto* and *M. megaera*, both from localities in southern England and admittedly regarded by Newman himself as mere variants of the common *Melecta punctata* (Fabricius, 1775), a species now properly called *M. albifrons* (Forster, 1771)¹⁾. The four remaining specimens of *Melecta*, all of them collected in England, were described in the same way to the former, receiving the names *M. atropos*, *clotho*, *lachesis*, and *tisiphone*. Although the validity of this nomenclature, like that of the other two, can not be called in question and should be borne in mind by future workers on the genus, they are of no concern in the present context.

¹⁾ In view of the many so-called "Spielarten" occurring in the entomological literature of the past, I am tempted to quote certain passages in Newman's cheerful introduction to the genus *Melecta* preceding the definition of his novelties, — contemplations which may give an idea of his and some contemporary authors' appraisal of specific names and the valuation of nomenclatural problems in general: — "It is pleasant to create a smile; and I anticipate that many smiles will be accorded me when I coolly assure your readers, that I am going to make six distinct species out of *Melecta punctata*, and that I cannot, for the life of me, tell to which of these the name *punctata* properly belongs, and therefore have given it to neither. It is pleasant to see one's new species given, without comment, as synonyms; and when this happens, and happen it certainly will to my *Melectae*, I hope I shall take it as good-humouredly as Mr. Waterhouse did, when he beheld his fourteen new *Notiophili* consigned to utter oblivion". "In these cases there is this comfort, that if the new-made species are really species, they will in the course of time be re-admitted: allow a year for each really new species parted from an old one; then the *Notiophili* will be re-admitted by the year 1847, and the *Melectae* — for I reckon them already struck out — by the year 1841".

Indeed, as time went on, re-adjustments in the nomenclature became almost prevailing topics of action, — though not always exactly in the way Edward Newman had predicted!

Summarizing the above, it will be clear that the two specific names *M. alecto* Liefstinck and *megaera* Liefstinck, are preoccupied and should be substituted by new names, as follows:

M. diligens nom. nov. pro *M. alecto* Liefstinck, 1980: 164, 186 (keys) & 273 (nom. preocc.). — Holotype ♂, Iraq, in Brit. Mus. (Nat. Hist.), London.

M. mundula nom. nov. pro *M. megaera* Liefstinck, op. cit.: 175, 185 (keys) & 243 (nom. preocc.). — Holotype ♂, Cyprus, in Mus. f. Naturk., Berlin DDR.

In the same work (1980), the following corrections should be made: p. 140 line 12, the wording "specific of varietal" should read "specific or varietal"; p. 290, line 11 from bottom, "figs. 231—232" should read "fig. 231"; p. 291, in the explanation of figs. 231—236, the word "antenna" should, of course, be replaced by "maxillary palpus", shown in fig. 232.

I shall gratefully accept any information about further errors and omissions occurring in this publication.

In the genus *Habropoda* F. Smith, the following case of synonymy could be established:

Habropoda apatelia Liefstinck, 1974: 171, 178 (keys), 215, 216, figs. ♂ ♀ Darjeeling, *Syn. nov.*

This taxon proves to be conspecific with the long-lost *H. krishna* Bingham, 1909 (Rec. Ind. Mus. 2: 366—367, ♂ Darjeeling 7000 ft.). Confirmed after direct comparison of morphology and internal structures of the well-preserved holotype of *krishna* (still in coll. Zool. Survey of India, Calcutta) with topotypical holotype of *apatelia* in the Brit. Mus. (Nat. Hist.) and paratypes in the Leiden Museum.

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My best thanks are due to a number of entomologists who, through the years, kindly complied with my requests to recover certain melecine types and other valuable anthophorid specimens in various museum collections abroad. They kindly arranged for long-term loans to be made, and for waiting patiently for the ultimate return of specimens under their care: Messrs. H. Fankhänel (Leipzig, DDR), and G. Morge and J. Oehlke (both D.E.I., Eberswalde), for the loan of the long-concealed type of *Tetralonioidella* ? *hoozana* Strand. I am also grateful to J. G. Rozen Jr. (Amer. Mus. Nat. Hist., New

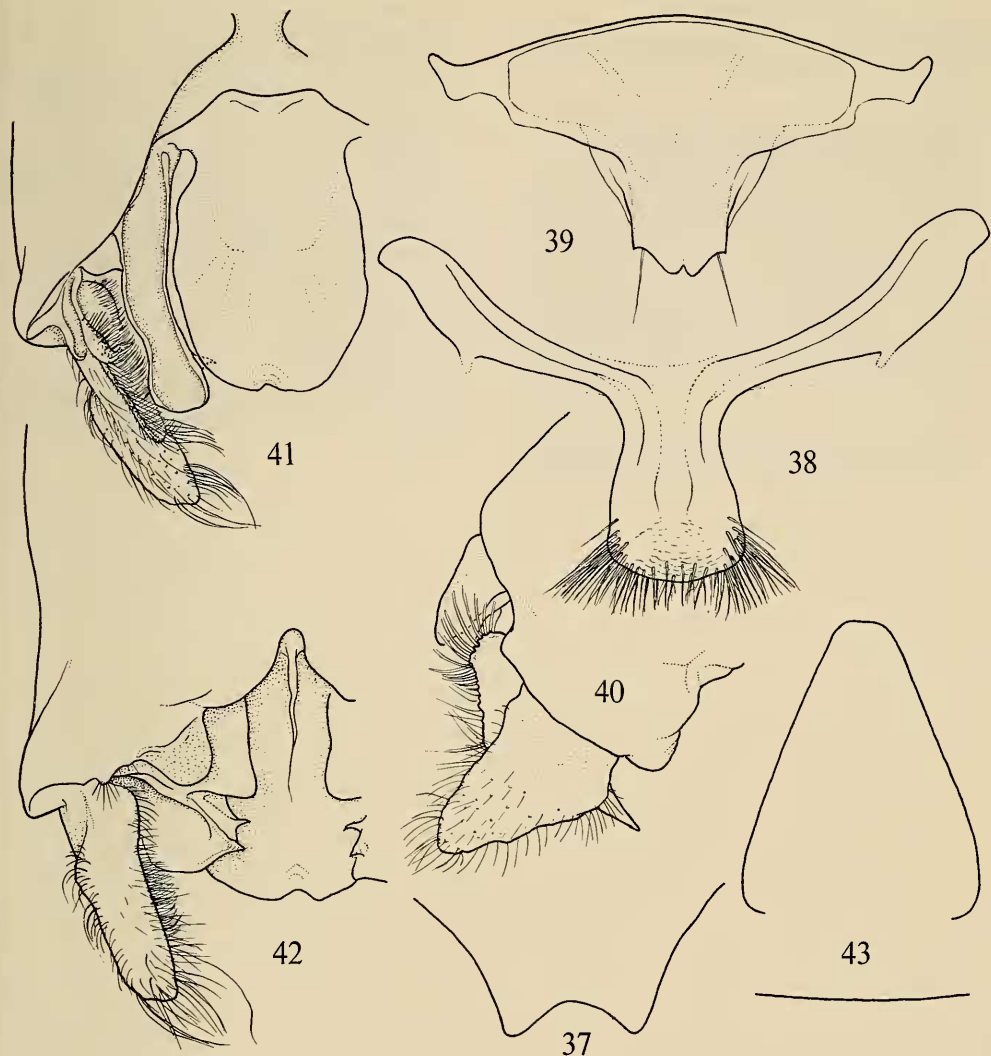


Fig. 37—43. *T. vulpecula* (Lieft.), ♂ and ♀ structures, S. Sumatra; fig. 37, apex of ♂ tergite 7, ventral view; fig. 38—39, ♂ sternites 7 and 8, external view (s_8 slightly more downpressed); fig. 40, right lateral view of distal portion of genital capsule; fig. 41—42, apices of ♂ genital capsule, dorsal and ventral view; fig. 43, ♀ pygidial plate, dorsal view (after Lieftinck, 1944).

York) for the type loan of *Callomelecta habropodae* Ckll.; to J. R. Barron, J. E. R. Martin and W. R. M. Mason (Biol. Res. Sta., Ottawa, Ont.), for specimens collected by members of the Canadian Nepal Expedition 1967, which included the type of *Tetralonioidella nepalensis* spec. nov.; and to T. C. Maa (Taichung, Taiwan), for his great interest in the cuckoo bees of the present genus and their hosts, as well as for numer-

ous Anthophoridae assembled by him in Fukien during the first years of World War II, on which occasions the type of *T. fukienensis* spec. nov. was discovered. Lastly, I am indebted to L. B. Holthuis (Leiden), who found out the exact dates of issue of some articles, which appeared almost simultaneously in different European journals.

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